REMARKS

The Office Action dated December 15, 2004, has been carefully reviewed. Claims 1, 12, 13, and 15 have been amended, and Claim 16 has been canceled, and several paragraphs in the Specification have been amended in order to advance the prosecution of this application. Claims 1-15 and 17 and 18 remain active in this application.

The Examiner rejected claims 1-11 under 35 U.S.C. 103(a) as being unpatentable over Winker et al. (US 3,331,573) in view of Frieder (US 3,252,676).

Claim 1 has been amended to teach the strips and vent holes being arranged for providing a low opening shock, and a drag for a rate of descent. Winker (US 3,331,573) figure 7 shows cross strips that cross leaving a space for no apparent reason. Applicant uses spacing to form a vent of a calculated size to reduce the high opening shock of the parachute. These vents along with the independent panels that attach to the suspension lines are essential to this design working by providing a reduced opening shock and reduced cost to build. This would not be obvious to one skilled in the art because every other parachute has a continuous skirt where the suspension lines connect. Applicant's panels (strips) come to a single point that aid in the soft opening and reducing the cost. This is not obvious because all previous designs have relied on the strength of the canopy radials not on the fabric itself to take all of the forces.

The edges of the material are reinforced with shroud lines or tapes (figure 7, elements 37, 38, 39, and 40 of Winker et al.) and carry the transmitted forces. Applicant uses no support of shroud lines or tape but the inherit strength of the relatively new woven polypropylene. The warp fibers are run continuously from the suspension line on one side to the opposite side suspension line. Each suspension line captures the vertical (radial) fibers through a sewn in sleeves at the ends, eliminating and saving the cost of both the shroud lines or tapes and reducing the suspension lines to one per panel. The Winker design uses the standard method of parachute design by running shroud lines or tapes from each suspension line to one on the opposite side, which carries the main load. The fabric between them is inherently weaker and is designed to mostly carry the air loadings between the shroud lines or tapes. Winker uses an inherently weak polyethylene material and Frieder (US 3,252,676) suggests using nylon, which does not have enough tear strength in the weight needed for Applicant's parachute. The nylon used in the Frieder parachute is for a ribbon parachute with the strips 2 inches wide. Applicant's design uses fabric widths of from 3 feet to 8 feet wide. No one has been able to produce a parachute using stock widths material this wide without many shroud lines or tapes. It would not be obvious to anyone seeing the Winker design because it uses the design as shown in any parachute design manual such as T. W. Knacke "Parachute Recovery Systems Design Manual" that shows the method of designing parachutes by using radial reinforcements and connecting them directly to the suspension lines to carry the main parachute forces. The fabric then is used to fill in between the radials.

The Examiner rejected claims 12 and 13 under 35 U.S.C. 103(a) as being unpatentable over Winker et al. in view of Frieder, and further in view of Mitchell (US 3,531,067). In the prior art, radials run continuously from one side of a parachute to the other side of the parachute. These radials are the main structural members. Fabric is attached to these structural members to form the parachute. However, the fabric itself is the load-carrying member in Applicant's invention.

Mitchell (U S 3,531,067) shows a conventional cross parachute with the suspension lines tied on to the canopy at the reinforcement radials (element 17) and on the other end to the parachute risers (element 43). This is the conventional way of parachute design. Applicant attaches the suspension lines directly to the fabric by a sleeve at the end of each strip that grabs the entire vertical, warp fibers and transmits all the forces through the fabric instead of through any shroud lines or tapes. It would not be obvious to do this because all previous designs have relied on shroud lines or tapes.

The Examiner rejected claim 14 under 35 U.S.C. 103(a) as being unpatentable over Winker et al. in view of Frieder, and further in view of Jones (US 4,664,342).

Jones patent is for a ram air parachute and the element 25 is a slider to slow the opening of the parachute. Applicant is unique in that it is a 4-point suspension to the load. This method of connection prevents overloading of the individual suspension lines of the container because of the independent freedom of each line connected to the canopy instead of the suspension lines

coming to a single confluence point that can put all the canopy loading on a single suspension line from the load.

The Examiner rejected claim 15 under 35 U.S.C. 102(b) as being anticipated by Winker et al.

Claim 15 has been amended to include strips and vents being arranged for a low opening shock and a drag for a gentle descent, and to include the teachings of claim 16 for fixing the suspension lines to the ends of the strips. The teachings of claim 15, as amended, are not shown in Winker et al.

The Examiner rejected claim 16 under 35 U.S.C. 103(a) as being unpatentable over Winker et al. in view of Mitchell (US 3,531,067).

Claim 16 has been canceled.

The Examiner rejected claims 17 and 18 under 35 U.S.C. 103(a) as being unpatentable over Winker et al.

Claim 17 and 18 are dependent on claim 15 which has been amended, and which includes the teachings of claim 16. Claims 17 and 18, being dependent on amended claim 15, would not be obvious to one skilled in the art in view of Winker et al.

The Examiner rejected claims 15-18 under 35 U.S.C. 112, second paragraph, because in claim 15, the term "each free end of each strip" lacks a prior antecedent basis. Claim 15 has been amended to change the term to "ends of said strips" which has a prior antecedent basis.

The Examiner objected to the disclosure because the term "decent" is misspelled. Page 7, lines 12, 16, 20 and 23 have been amended to correct the spelling to read "descent".

The Examiner mentioned the patent to Downing (US 3,127,137). Downing is a ribbon parachute designed for high speed and still using the standard method of radials to take most of the loading. Radials of shroud lines or tapes run from the suspension line attachment at the skirt, over the top of the canopy and to the other side to connect with another suspension line. Horizontal ribbons, usually only a few inches wide connect to the radials around the parachute. Applicant teaches a modified cross parachute type that is simpler and lower cost to make. It depends on using wide panels 3 to 8 feet wide without radials and also allows the suspension lines to be reduced. This is accomplished by using the fabric itself to carry the parachute loadings. The suspension lines capture all the radial fibers together at a single point through the use of the folded and sewn free ends of the panels that create a sleeve. The rope is then threaded through the end sleeve and tied. This creates a triangular shape of the fabric legs that acts like a standard skirt panel that has many suspension lines that carry the load. The integrity of the vertical, radial fibers is continued over the top of the canopy to the other side without shroud lines or tapes and attached to another side to a suspension line as was done on the other end. Spacing the panels provides for optimum venting on both the top and sides of the canopy during the parachute opening to reduce the shock and prevent failure.

In view of the foregoing amendments and remarks, it is believed that Claims 1-15 and 17 and 18 in this application are allowable and Notice to that effect is respectfully solicited.

Should the Examiner wish to contact Applicant's attorney regarding this application, the Examiner is respectfully invited to do so by calling or writing the undersigned in the Office of Counsel, U.S. Army Soldier Systems Center, Natick, MA 01760 at (508) 233-4510.

Respectfully submitted,

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Date

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